Location ID: ST-2-466 Field Representative(s): R. Cooper

Northing: 229171.08 Easting: 399037.41

Date Started: 07/31/89 Date Completed: 08/18/89

Drilling Method: Mud & Air-Foam Rotary Drilling Contractor: Larjon

Driller: T. Crawford

Total Depth Borehole: 494' Total Depth Well Casing: 481.36'

Total Depth Surface Casing: 79'

Diameter Well Casing: 4" Diameter Surface Casing: 10"

Length of Bottom Blank: 5.2'

Type of Screen: Extra Strength 0.02 slot

Screen Interval: 465.7' to 476.2'

Water First Detected: 440'-445' Water Level Open Borehole: 397.65' (OC)

Water Level Cased Borehole: 400.03' (IC)

Quik-Foam Use: 7 gallons

Estimated Water Use: ≈ 5400 gallons total used while drilling
≈ 2000 gallons measured in mud pit

≈ 3400 Total water introduced to well

Well Casing: No casing installed.

4in x 3ft SCD 40 PVC:		stock SS centralizers:	0
4in x 5ft SCD 40 PVC:		custom SS centralizers:	1
4in x 10ft SCD 40 PVC:		4"x2' SS locking riser:	1
4in x 20ft SCD 40 PVC:		4" SS locking cap:	1
Total SCD 40 PVC pipe:	0 ft	4" SS female cap:	1
4in x 3ft SCD 5 SS pipe:	2 + 1 discarded		
4in x 5ft SCD 5 SS pipe:	0	4in x 5ft SCD 10 SS pipe:	1
4in x 10ft SCD 5 SS pipe:	1	4in x 10ft SCD 10 SS pipe:	1
4in x 20ft SCD 5 SS pipe:	19	4in x 20ft SCD 10 SS pipe:	3
Total SCD 5 SS pipe:	396 ft	Total SCD 10 SS pipe:	75 ft

Well Completion:

100# bags 16/40 sand:	12	bags
100# bags 10/20 sand:	0	bags
100# bags 8/14 sand:	0	bags
100# bags 8/20 sand:	32	bags
94# bags cement:	175	bags
5 gal. buckets bentonite:	0	buckets
50# bentonite powder:	17.5	bags
25# Benseal	1/2	bag
Sacrete	10	bags

Water used in grout - approx. 1500 gallons

Surface Casing:

94# bags cement:	34	bags
50# bags bentonite powder:	3	bags

Pertinent Field Notes:

07/28/89 Mobilize and set up at well site. New portable mud pump was brought to site to use with BE rig for mud drilling. Portable mud pit (Mudder Goose) will still be used with portable mud pump. Mud pit had filled (≈1′) with rain water and arroyo flow; water was pumped out of pit. - Cooper

07/31/89 Mud pit had filled with approx. 3′ of rain water and arroyo flow. Water was pumped out and the pit was lined. Drilling 0′-80′, 12 1/4" pilot hole. Pilot hole was reamed from 0-80′ with 16" bit. Both pilot hole and reaming were done using mud rotary drilling method. Filled both water trucks at the end of the day. - Cooper

08/01/89 Ran 10" x 79′ steel surface casing. Mixed 44 bags cement and 4 bags bentonite gel. Pumped approx. 34 bags cement and 3 bags gel to grout in surface casing, the remainder of the cement and gel were put into 100-B-* to grout to surface. Moved mud drilling a equipment off site and brought in equipment for air-foam rotary drilling. Lockheed burmed around east, north, and south side of well pad to divert water from heavy rains. - Cooper.

08/02/89 Prepare for air-foam drilling; weld new hard-surface on stabilizer. Stabilizer bars cracked loose and had to be rewelded. Drilled from 80'-250' with 9 7/8" bit using air-foam drilling method. Drilled through mostly clays with sand and gravel lenses. Larjon took water truck to Jornada water supply well to fill tomorrow. - Cooper

08/03/89 Larjon filled water truck at Jornada. Drilled 250'-484' (TD) with 9 7/8" bit using air-foam rotary drilling method. Lithology was mostly clay to 270' and decreased significantly below. Below 235' clay represented only 0-5% of each sample. Water was possibly detected 440'-445'. At 455' well allowed to recover approx. 10 min. while filling water truck. When hole was blown there was a significant amount of water blown out. Borehole was advanced to 484' (TD) to allow room for completion interval and sloughing. - Cooper

08/04/89 Loaded 1 pallet 4" SS casing, 1 pallet 8/20 sand and 1 pallet 16/40 sand with forklift. Static water level taken at 397.65'. Larjon tripped in drill pipe and cored 484'-494'. Only about 5% recovery with new catcher due to the type of material cored (large cobbles and boulders to fine-grain sands). P. Akins of S.W. Surveys ran standard suite of logs plus drift log. Larjon finished loading materials for completion and steam cleaned.- Cooper

08/05/89 Sounded the bottom of the borehole at 482.0'. Ran 484.86' 4" SS casing and extra strength screen with 2.5' stick-up above ground level. Installed 8/20 gravel pack around screen and 16/40 sand above 8/20 sand. Set up to pump plug with 35 gallons water, 32 lbs. ice, 1 cup E-Z mud and 25 lbs. Benseal. Pumped plug and pulled 3 joints tremie (tremie out of water). - Cooper

08/07/89 Sounded top of plug at 452'. Added 3:1 ratio 8/20 and 16/40 sand to 382' (approx. 15' above SWL). Poured grout with 5.6% bentonite (100 sacks cement and 10 sacks bentonite gel). Ran bailer to check for grout invasion. Started moving equipment off well site. Filled water trucks. - Cooper

08/08/89 Sounded 1st load of grout at 185'. Approximately 1.97' feet rise per sack of cement. Calculated 49 bags cement needed to grout to surface using calculation sheet. Mixed 60 sacks cement and 6 sacks bentonite gel and 510 gallons water. Grout dropped ≈ 40'-70' below surface. - Cooper

08/09/89 Surged and bailed well with a surge-block and bailer. Set 1 1/2 hp submersible pump at ≈469 (intake). Developed well until parameters stabilized and turbidity was below 5 NTU. Approximately 1300 gallons developed out. - Cooper

08/11/89 Estimated grout poured in hole was 15 bags cement with 1.5 bags bentonite gel. Poured to surface but dropped below after setting. - Cooper

08/18/89 Poured concrete well pad and set brass cap. Used 10 bags of sacrete. Well completed. - Egan